R. M. TIETZ

PORT ELIZABETH MUSEUM,
SNAKE PARK and OCEANARIUM

The Southern Bottle-nose Whale **Hyperoodon planifrons** from Humewood, Port Elizabeth

ABSTRACT

The stranding of an adult male Beaked Whale **Hyperoodon planifrons** at Port Elizabeth is recorded. The distribution of this whale and its relationship to Hyperoodon **rostratus**, the Northern form, are discussed briefly.

INTRODUCTION

On the morning of January 18th, 1964, a specimen of the Southern Bottle-nose Whale **Hyperoodon planifrons** was washed up near the old slipway at Humewood, Port Elizabeth and was stranded at low tide. Members of the Museum staff were able to take measurements and photographs and secure the skull and mandible for the Museum before municipal officials disposed of the carcass. This is the first definite record of this species from South African coastal waters.

EXTERNAL FEATURES (see figure 1.)

The animal was an adult male beaked whale measuring 20 feet in length and weighing approximately 5 tons. In colour it was cloud grey but paler along flanks and belly and on the underside of the pectoral flippers. The head bore a prominent rounded forehead and well defined beak. In length the beak was shorter than that of **Berardius arnouxi**, another so-called Bottle-nose Beaked whale, and the lower jaw did not project beyond the snout. Even after careful examination no teeth

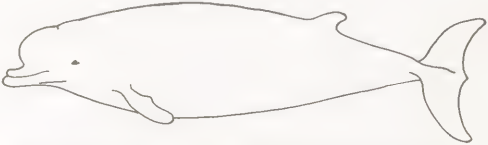

Figure 1
Scale outline of **Hyperoodon planifrons** to show form and external features

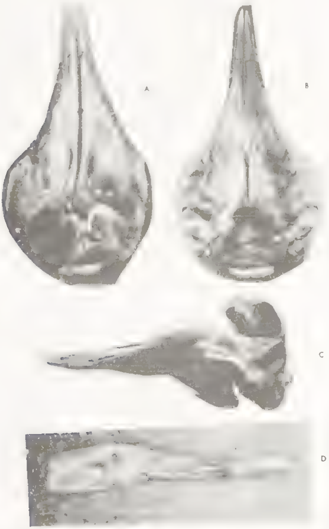

Plate 1
Skull of **Hyperoodon planifrons**
A. Dorsal aspect, B. Ventral aspect, C. Lateral aspect and D. Lateral view of lower right mandible (reconstructed) with tooth.

were detected in the jaws. The blow-hole showed no curvature and took the form of a transverse slit lying just anterior to the vertical level of the eye. The V-shaped grooves beneath the chin, a distinctive character of the Ziphiidae are deep and well defined. The pectoral flippers are small as is the dorsal fin which is falcate and situated well behind the middle of the body. The flukes showed no trace of a median notch, another Ziphioid characteristic, in fact the rear edges of both flukes were concave and met medially to form a slight but distinct projection. The greatest girth of the animal lay just behind the insertion of the pectoral flipper.

The external measurements are recorded in table 1.

TABLE 1

BODY PROPORTIONS OF ADULT MALE HYPEROODON PLANIFRONS FROM PORT ELIZABETH

	mm	%
Total length	6360	100
Length snout	215	3.4
Tip of jaw to vertical line of angle of mouth	507	7.9
Tip of beak to beginning of groove	457	7.2
Length throat groove	254	3.9
Height of forehead	304	4.8
Length blow-hole	178	2.7
Tip of beak to vertical level of eye	740	11.6
Tip of beak to axilla	1470	23.0
Length flipper, axilla to tip	686	10.8
Greatest breadth flipper	228	3.5
Tip beak to anterior base of fin	4100	64.5
Extent of base of dorsal fin	420	6.6
Height dorsal fin	290	4.6
Span of flukes (tip to tip)	1640	25.78

In external appearance **Hyperoodon planifrons** resembles the northern form **H. rostratus** and also the Beaked whale **Berardius arouxi** but differs from the latter in that the lower jaw does not project beyond the snout nor does it bear the two pairs laterally compressed teeth at its tip characteristic or **Berardius**.

For distinguishing between the species **H. planifrons** and **H. rostratus** one must turn to the features of the skull.

THE SKULL

The original description of **Hyperoodon planifrons** (Flower 1882) was based on a mutilated skull found on Lewis Island, North-west Australia. In spite of its imperfect condition Flower was able to assign the specimen to the Genus **Hyperoodon** Lacépedè and, at the same time pointed out characters distinctive of a new species; **Hyperoodon planifrons**. Among these of particular importance is the formation of the maxillary bones, a feature from which the animal derives its name. In H. **planifrons** the crests formed by the maxillae have a broad base and are low and rounded. Posteriorly they pass over the temporal fossae to form a continuous side wall to the depression housing the nares, air sacs and musculature of the blow-hole. (See plate 1A). In H. **rostratus** the maxillary crests are more elevated and posteriorly they drop sharply so that there is a deep depression of the maxillary bone between the crests and the Vertex of the skull formed by the premaxillae and nasals. Further, the premaxillae and nasals of **H. planifrons** are more greatly developed and over hang the narial aperture quite considerably (Plate 1C).

The skull of the South African specimen is typical of that of **H. planifrons**. It is perhaps smaller in size than that of the type and in general differs in no very significant detail from the description of the type (Flower1882) or from Fraser's (1947) description of a female specimen of **H. planifrons** from South Georgia.

Table 2 records the dimensions of the South African skull together with their percentage of the total (condylo-basal) length as well as these figures for the Discovery specimen (Fraser 1947), Type Specimen (Flower 1882) South Australian specimen (Hale 1931) and a specimen of **H. rostratus** for comparison.

From table 2 it can be seen that posteriorly the elevation of the supraoccipital is very much lower in the South African specimen than that in the other specimens of **H. planifrons** cited and is comparable with that of **H. rostratus**. The South African whale may be considered a fairly young specimen - the forehead is prominent but does not bulge as it is reputed to do in old males (Boschma 1951), further the teeth had not yet erupted. Possibly the development of the occipital elevation is a feature associated with the increase in the size of the melon or forehead with age.

In other respects the skull of the South African specimen is similar to those of the other specimens of **H. planifrons** tabled and the main differences between the skulls of the two species, H. **planifrons** and H. **rostratus**, are obvious from a comparison of the proportions. The maxillary crests are lower and wider at the base in **H. planifrons** while the skull is very much higher in this species due to the greater development of premaxillae and nasals at the vertex.

Turning from a comparison of the two species of **Hyperoodon** we come to a comparison of the three species of H. **planifrons** to find that the South African specimen resembles the female Discovery specimen (Fraser 1947) more closely than Hale's (1931) South Australian male. However, like the South Australian male, the South African male shows slightly broader and higher maxillary crests than in the female. This aspect of sexual dimorphism is considerable in the northern form H. **rostratus** but in this case is not apparent due to youth of male.

MANDIBLE AND TEETH

It is regrettable that the mandibles of the Bottle-nose whale were badly damaged and only fragments of both jaws and one tooth have been preserved. A reconstruction of the right mandible with the tooth has been attempted (Plate 1D)

TABLE 2

SKULL MEASUREMENTS OF HYPEROODON PLANIFRONS AND HYPEROODON ROSTRATUS

	South African male		South Australian female		Discovery female		Type Specimen		**Hyperoodon rostratus**	
	mm	%	mm	%	mm	%	mm	%	mm	%
Total length	1210	100	1391	100	1193	100	-	-	1333	100
Height of supra-occipital from upper margin of foramen magnum to top of occipital crest	249	20.6	410	29.5	348	29.1	375	-	295	22.1
Width of supra-occipital at narrowest part between hinder margins of temporal fossae	355	29.3	485	34.9	374	31.3	375	-	413	31.0
Width of foramen magnum	62	5.1	60	4.3	60	5.0	68	-	78	5.9
Height of skull to vertex	535	44.2	666	47.9	525	44.0	-	-	505	37.9
Greatest width of skull	636	52.6	-	-	601	50.4	-	-	665	49.9
Least width between orbital processes	470	38.8	-	-	593	49.7	-	-	631	47.3
Width of rostrum between antorbital notches	399	32.9	500	35.9	386	32.3	432	-	379	28.4
Length of rostrum (to antorbital notches)	726	59.9	857	61.6	688	57.7	-	-	823	61.8
Width of base of maxillary crest opposite antorbital notch	158	13.1	200-204	14.4-14.7	141	11.8	160	-	119	8.9
Greatest height of crest of maxilla	116	9.5	-	-	101	8.3	98	-	234	17.5
Height from bottom of nasal cavity to occipital crest	278	22.9	-	-	283	23.7	260	-	205	15.4
Greatest length of pterygoids	422	34.9	-	-	370	31.0	-	-	393	29.5
Tip of rostrum to posterior free border of pterygoids	933	77.1	1141-1150	82.0-82.7	948	79.4	-	-	1065	79.9
Tip of rostrum to anterior end of nasals	948	78.3	1065	76.6	863	73.2	-	-	1090	82.1
Breadth of rostrum in front of maxillary crests	169	13.9	210	15.1	170	14.6	190	-	161	12.1
Width of occipital condyles	211	17.4	237	17.0	209	17.5	212	-	263	19.7
Height	143	11.8	174	12.5	149	12.5	138	-	-	-

but measurements of this cannot be taken as finite except for Height of coronoid which is 174 mm.

In the fresh specimen the teeth were completely concealed by the gums but the tooth that has been recovered is conical measuring 51 mm in length with an unworn crown of dentine about 6 mm high at its apex and in every way resembles the teeth of the female. **H. planifrons** described by Fraser (1947).

In the Ziphiidae the teeth of the males are usually more massive than those of the females and the species of **Hyperoodon** usually conforms in this respect. Hale (1931) gives measurements of the teeth from a male **H. planifrons** which show that they are of the same length as those from the "Discovery female" and South African male and have a diameter twice as great. Furthermore the roots of the

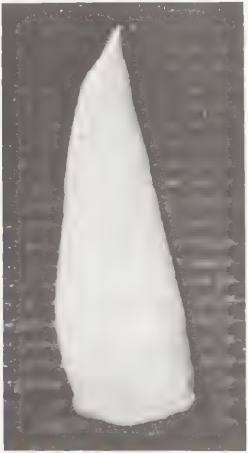

Plate 2
Tooth from lower jaw of **Hyperoodon planifrons**

teeth from Hale's specimen are closed, considered to be sign of age while the roots of both our specimen and the Discovery female are open. Thus the conical tooth pictured in plate 2 from the Bottle-nose whale washed up at Humewood is probably yet another indication of its youth.

DISTRIBUTION

Hyperoodon planifrons in contrast to H. rostratus which has a northern distribution, has been recorded from North-west Australia (Flower 1882) East Coast of South America (Moreno 1835), South Australia (Hale 1931), Queensland, Australia (Longman 1926 quote Mc Cann 1962), South Georgia (Fraser 1947), and New Zealand (Mc Cann 1961).

A beaked whale stranded at Mossel Bay in April, 1934 is thought to be a specimen of **H. planifrons** (Personal communication with Mr. P. Best, Hon. Curator of Marine Mammals at the South African Museum), but this is not certain. The stranding of H. planifrons at Humewood proves conclusively that this species does occur in South African waters and in no way alters McCann's (1962) conclusion that H. planifrons is restricted to the Southern hemisphere south of 20° latitude. In fact its presence in our waters provides a link between the two widely separated areas from which H. planifrons has been recorded.

ACKNOWLEDGEMENTS

My thanks are due to Mr. P. Best for supplying data of strandings from the South African Museum and also to Mr. J.M. Spence of the Port Elizabeth Snake Park for help with photography.

REFERENCES

Boschma, H. 1951. Some Smaller whales. **Endeavour** 10 (39).

Flower, **W.H.** 1882. On the Cranium of a New Species of **Hyperoodon** from Australian Seas. **Proc. Zool. Soc. Lond** pp. 392-396.

Fraser, **F.C.** 1947. On a Specimen of the Southern Bottle-nosed whale, **Hyperoodon planifrons**. "**Discovery**" **Rep. Zool**. 23 :pp. 21-36.

Hale, **H.M.** 1931. Beaked Whales - **Hyperoodon planifrons** and **Mesoploden layardi** from South Australia. **Rec. S. Austr. Mus.** 4 :291-306.

McCann Charles. 1961. The Occurrence of the Southern Bottle-nose whale, **Hyperoodon planifrons** Flower in New Zealand Waters **Rec. Dom. Mus**. 4 (3): 21-27.

McCann Charles. 1962. The Taxonomic status of the Beaked Whale **Mesoplodon pacificus** Longman - Cetacea **Rec. Dom. Mus**. 4 (10) :95-100.

Moreno, **F.P.** 1895. Nota sobre los restos **Hyperoodon** conservados en al Museo de la Plata. **Anales** Mus. **de la Plata**, Secc. **Zool iii.**

Norman, **J.R. and Fraser F.C.** 1948. Giant Fishes Whales and Dolphins. Putnam, London.